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fication of soils; Crossing corn; Emergencies; Removing ink from white goods; To make liquid yeast; Chicory in coffee; Cash account; Tent caterpillars; Planting trees; Farm gate lesson; Sewed seam; Overhand patch; Three-cornered darn; Cleft grafting. These exercises are arranged somewhat in the order of difficulty and in related groups, but the extent to which they shall elucidate principles or develop general ideas must very largely depend upon the teacher. If skilfully incorporated with other work and their bearings broadly discussed many of these exercises would have real educational value in fitting pupils to meet intelligently the actual problems of rural life.

The text-book proceeds in a more orderly way, establishing general principles and showing their application to problems of soil, culture, protection, selection, stock-raising and dairying. Suggestions for profitable observations or experiments are freely introduced. The illustrations are of unusual excellence, and the style clear and direct. Such a book cannot fail to advance the best interests of practical education in much needed directions. Both books might well be used together.

FREDERICK LEROY SARGENT.

**Notes.**—André Michaux's "Travels into Kentucky," F. A. Michaux's "Travels west of Alleghany mountains," and Harris's "Journal of a tour northwest of Alleghany mountains," are republished, with annotations, by Thwaites as vol. 3 of his series of *Early Western Travels*, issued by the Arthur H. Clark Company, of Cleveland. It is regrettable that the volume is not provided with an index making its wealth of detailed information available.

A small list of arctic plants is given in Schrader's "Reconnaissance in Northern Alaska," published as *Professional Paper No. 20* of the U. S. Geological Survey.

A polyglot suggestion of amendments to the Paris code of botanical nomenclature, addressed to the Vienna Congress of 1905, has been published by the botanists of the Gray Herbarium, the Cryptogamic Herbarium and the Botanical Museum of Harvard University, under date of June 9.

The annual species commonly referred to Polypteris have been segregated under Rafinesque's generic name Othake, by Bush, in vol. 14, no. 6, of the *Transactions of the Academy of Science of St. Louis*.

Three new exotic orchids ascribed to Rolfe are described by Ames in *Proceedings of the Biological Society of Washington*, of June 9.

Two new Jamaican species of *Polypodium* are described by Maxon in no. 1374 of *Proceedings of the U. S. National Museum*.

Blakeslee has an interesting note on the sexuality of *Rhizopus* in *Science* of June 3.

A paper on vitality and germination of seeds, by Duvel, forms *Bulletin no. 58* of the Bureau of Plant Industry of the U. S. Department of Agriculture.

A résumé of ecological work in 1903 is given by Cowles in *Science* of June 10th.

A healthy sane tone pervades an article by Holt on the value of field and herbarium work in high school botany, published in *School Science* for June.

Ecological experiments on *Rumex Acetosella* are described by Transeau in *Science* of June 3.

A critical study of *Lepidium* is being published by Schinz in the *Bulletin de l'Herbier Boissier*.

A popular account of the native Papaw is given by Viola McCohn in *Country Life in America* for July.

A further list of Eastern species of *Cratægus* is published by Ashe, under date of June 15, in vol. 20, no. 2, of the *Journal of the Elisha Mitchell Scientific Society*.

Professor Bessey calls attention, in *Science* of June 24, to the early falling of the aberrant lowermost leaves of *Acer Negundo* each year.

The July number of *Arboriculture*, printed on paper made from the wood of *Catalpa*, contains data as to the availability of this wood for paper purposes.

A review of Californian Polemoniaceæ, by Jessie Milliken, forms vol. 2, no. 1, of the *University of California Publications, Botany*, issued May 10.

Heft 19 of Engler's "Pflanzenreich," is devoted to Betulaceæ, by Winkler.

An account of *Persea gratissima* as cultivated in Florida is published by Rolfs as *Bulletin no. 61* of the Bureau of Plant Industry of the U. S. Department of Agriculture.

A developmental account of Juncaceæ is contributed by Laurent to no. 2-3 of the current volume of *Annales des Sciences Naturelles, Botanique*.

Anatomico-ecological studies of Tillandsia are published by Mez in Vol. 40, Heft 2, of *Jahrbücher für wissenschaftliche Botanik*.

The Germination of Amaryllidaceæ is considered by Worsley in the *Journal of the Royal Horticultural Society* of May.

A reprint of Bradbury's "Travels in the Interior of America," second edition, London, 1819, which forms vol. 5 of Thwaites' "Early Western Travels," contains a list of plants collected about St. Louis and on the Missouri River.

Under the title "Contributions to our knowledge of the flora of the Rocky Mountains," Aven Nelson has collected as a thesis for the Doctor's degree his more important papers published in various journals between 1898 and 1904.

The opening fascicle of vol. 5 of Urban's "Symbolæ Antillanæ" contains revisions of Smilax (by Schulz), Celastraceæ (by Urban), and Sapotaceæ, in part (by Pierre and Urban).

Under the heading "Trabajos de la Oficina de Historia Natural," the Colombian government is publishing a series of papers on the botany of that country, by Cortes.

The first fascicle of vol. 2 of Arechavaleta's "Flora Uruguayana," has been issued by the Museo Nacional de Montevideo, as a part of its *Anales*.

Volume 2 of Wood's "Natal Plants" is completed by the issuance of part 4, dealing with grasses.

No. 28 of the new series of "Contributions from the Gray Herbarium of Harvard University," forming vol. 40, no. 1, of the *Proceedings of the American Academy of Arts and Sciences*, and issued on July 18th, contains the following papers: Robinson and Greenman, Revision of the Genus Sabazia, Revision of the Mexican and Central American Species of Trixis, and Revision of the Mexican and Central American Species of Hieracium; Fernald, Synopsis of the Mexican and Central American Species of Alnus, and Some New Species of Mexican and Nicaraguan Dicotyledons; and Greenman, Diagnoses and Synonymy of Mexican and Central American Spermatophytes.

A companion to M. van den Bossche's "Icones Selectae Horti Thenensis" has been started, also with the botanical collaboration of de Wildeman and the delineating skill of d'Apréval, under the title "Plantæ Novæ vel Minus Cognitæ ex Herbario Horti Thenensis." The first part bears date March, 1904.

An account of the Harvard Botanical Station in Cuba, with extracts from Superintendent Grey's report, is given by Dr. Goodale in *The American Journal of Science* for July.

A quarto treatise on the Phytoplankton of the Atlantic and its tributaries, by P. T. Cleve, is published by the author at Upsala.

A large number of economic topics are well treated by Halsted in his recently issued *Report of the Botanical Department* of the New Jersey Agricultural Experiment Station, for 1903.

An account of the principal commercial plant fibers, by Dewey, is separately printed from the *Yearbook* of the U. S. Department of Agriculture, for 1903.

An illustrated account of some old trees, by Pollmer, is contained in *Die Gartenwelt* of June 25.

Professor Peck's Report of the State Botanist for 1903, published as Bulletin 75 of the New York State Museum, contains among other things a paper on edible fungi and one on the species of *Cratægus* found in the State.

Experiments in the heredity of peas are detailed by Hurst in the *Journal of the Royal Horticultural Society* of May.

A second edition of E. G. Paris' "Index Bryologicus," reaching to the end of 1900, is being issued in fascicles from the Hermann Press, of Paris.

A further addition to the nomenclature literature to be laid before the Vienna Congress of 1905, by Harms, forms appendix 13 to the current *Notizblatt des K. botanischen Gartens und Museums zu Berlin*, and is dated June 20, 1904.

A bacterial rot of the Calla is described by Townsend in *Bulletin No. 60* of the Bureau of Plant Industry of the U. S. Department of Agriculture.

An account of "fungoid pests of the garden," by Cooke, is contained in current numbers of the *Journal of the Royal Horticultural Society*.

Cultural experiments with biologic forms of the Erysiphaceæ are detailed by Salmon in a paper separately printed from the *Philosophical Transactions of the Royal Society of London*, Series B, vol. 197.

"Investigations of Rusts" is the title of *Bulletin No. 63* of the Bureau of Plant Industry of the U. S. Department of Agriculture, by Carleton.

A paper by Cooke on edible fungi is contained in the *Journal of the Royal Horticultural Society* of May.

The botanical articles of greatest interest in the *Year-book of the United States Department of Agriculture* for 1903 are:—Kebler, "The Adulteration of Drugs"; Taylor, "Promising New Fruits"; Shepard, "Macaroni Wheat"; True, "Cultivation of Drug Plants in the United States"; Dewey, "Principal Commercial Fibers"; and the reports on plant diseases forming part of the appendix.

Vol. 11 of the *Proceedings of the Iowa Academy of Sciences* contains the following articles of botanical interest:—Buchanan, "A Contribution to our Knowledge of the Development of *Prunus Americana*"; Miller, "The Lichen Flora of the 'Ledges,' Boone County, Iowa"; Martin, "A Chemical Study of *Rhus glabra*"; Cratty, "The Flora of Emmet County"; and Mueller, "A Preliminary List of the Flowering Plants of Madison County."

A number of interesting botanical papers are contained in the recently issued Vol. 36 of the *Transactions and Proceedings of the New Zealand Institute*.

Vol. 1 of Rendle's "Classification of Flowering Plants" (Cambridge, 1904) deals with Gymnosperms and Monocotyledons.

An account of *Pæonia*, as now popularly cultivated, is contributed by Miller to *Country Life in America* for September.

The first part of a discussion of the variability of *Eucalyptus* under cultivation is published by Maiden in No. 112 of the *Proceedings of the Linnean Society of New South Wales*.

An illustrated account of the cultivation of *Acacia mollissima*, by Fairchild, forms *Bulletin no. 51, part 4* of the Bureau of Plant Industry of the U. S. Department of Agriculture.

Vol. 10, part 1, of the *Annals of the Royal Botanic Garden, Calcutta*, consists of a revision of the species of *Dalbergia* of S. E. Asia, by Prain.

*Opuntia rutila* is figured in the *Monatsschrift für Kakteenkunde* of July 10.

*Ailantus Vilmoriniana*, a Chinese species, recently introduced into France, is described and figured by Dode in the *Revue Horticole* of Sept. 16.

Two segregates of *Rubus argutus Randii* are described by Blanchard in *The American Botanist* of July.

A very large tree of *Quercus alba* is described and figured by Rothrock in *Forest Leaves* for August.

The fruit of *Melocanna*, a viviparous grass without endosperm, is described by Stapf in Vol. 6, part 9, of the current botanical series of *Transactions of the Linnean Society of London*.

An important paper on monœcious and dicœcious grasses, with illustrations, is published by Pilger in Engler's *Botanische Jahrbücher* of August 16.

The aerating nodal roots of *Bambusa* are discussed by Montemartini, in Vol. 3, fascicle 2, of the *Contribuzioni alla Biologia Vegetale* of the Palermo botanical institute.

The root structure of North American terrestrial orchids is considered by Holm in *The American Journal of Science* for September.

A study of the *Corbularia* group of *Narcissus* is published by Bureau in No. 1-2 of the current volume of the *Bulletin de la Société des Sciences Naturelles de l'Ouest de la France*.

A synopsis of the varieties of pineapple cultivated in Florida is given by Hume and Miller in *Bulletin 70* of the Experiment Station of that State.

No. 23 of Holm's "Studies in the Cyperaceæ," published in *The American Journal of Science* for October, deals with morphological aspects of the inflorescence.

No. 2 of *Plante Nove vel Minus Cognite ex Herbario Horti Thensis*, dated in June last, contains a considerable number of Cyperaceæ by Clarke.

An exhaustive paper entitled "Contributions to the Knowledge of the Life History of *Pinus* with Special Reference to Sporogenesis, the Development of the Gametophytes and Fertilization," by Miss Ferguson, forms a thick brochure of Vol. 6 of the *Proceedings of the Washington Academy of Sciences*, issued on October 4th.

In the *Gardeners' Chronicle* of August 6, Mr. Shaw restores two lost names of Morelet (1855) for later names in *Pinus* by Grisebach and himself.

A general account of the vegetation of Missouri, by Duggar, is contained in Williams' "The State of Missouri," printed at Columbia, Mo.

A physiographic and ecological study of the Lake Eagle region of Indiana, by Mills, is contained in the 28th *Annual Report* of the Department of Geology and Natural Resources of that State.

Separates of Dr. Kennedy's "Flora of Willoughby, Vt.," have been issued, in attractive binding, by the author, from *Rhodora*.

An account of the flora of the Peace River region of Canada, is given by Macoun in *The Ottawa Naturalist* of September.

Botanical items are included in Notes on the Falkland Islands, by Vallentin, in Vol. 48, part 3, of the *Memoirs and Proceedings of the Manchester Literary and Philosophical Society*, issued in July last.

A "Novus Conspectus Floræ Europæ," by Gandoger, is in course of publication in the *Bulletin de l'Académie Internationale de Géographie Botanique*.

Ascherson and Græbner's "Synopsis der Mitteleuropäischen Flora," in Lieferung 31-2 concludes the *Spathifloræ*.

Coste's "Flore descriptive et illustrée de la France, etc.," in Vol. 3, fascicle 2 reaches into *Polygonaceæ*.

The concluding third volume of Halácsy's "Conspectus Floræ Græcæ," has recently been issued from the Engelmann press of Leipzig.

Vol. 4, section 2, part 2, of the "Flora Capensis," under the editorship of Sir William T. Thiselton-Dyer, is occupied with *Scrophulariaceæ*.

Cooke's "Flora of the Presidency of Bombay," in Vol. 2, part 1, reaches well into *Boraginaceæ*,—on the Bentham and Hooker sequence of families.

An account of the vegetation of the district of Minbu, in Upper Burma, by Gage, forms Vol. 3, part 1, of the *Records of the Botanical Survey of India*.



A comprehensive biological account of the island of La Mocha, by Reiche and others, forms No. 16 of the *Anales del Museo Nacional de Chile*.

Notes by Bessey in *Science* of July 22 show that each plumed akene of *Taraxacum* weighs on an average .00044 gm., and that a medium sized tree of *Populus deltoides* bears not far from 28,000,000 seeds, of an average weight of .00065 gm. each.

An interesting paper on the adventitious epiphytic occurrence of terrestrial plants in Norway has been distributed by Holmboe from No. 6 of the current volume of the *Christiania Videnskabs-Selskabs Forhandlingar*.

The thermotropism of *Rhododendron* is described and illustrated by Johnson in *Country Life in America* for November.

A preliminary paper on electrotropism of roots, by Plowman, is published in *The American Journal of Science* for August and September.

A popular account of carnivorous plants, by Shreve, is contained in *The Popular Science Monthly* for September.

A new and enlarged edition of Pammel's "Flower Ecology" has been published from the J. B. Hungerford Press of Carroll, Iowa, under the title "Ecology." Seventeen chapters deal with the chief topics.

Professor Kraemer has issued separates of a paper on the origin and nature of color in plants from Vol. 43 of the *Proceedings of the American Philosophical Society*.

A note on the pollination of *Calepogon pulchellus* is published by Klugh in *The Ottawa Naturalist* of August.

A syllabus of the economic plants of the temperate zones represented in the Dahlem garden is given by Engler in Appendix 14 of the *Notizblatt des K. botanischen Gartens und Museums zu Berlin*.

A key to the genera of the forest trees of Indiana, based chiefly upon leaf characters, by Coulter and Dorner, has been issued by the authors from Lafayette, Ind.

Under the title "Getting Acquainted with the Trees," a tasty and beautifully illustrated little book by McFarland has recently been issued by The Outlook Company, of New York.

An excellent little illustrated pocket guide to British trees is Step's "Wayside and Woodland Trees" (Warne, London and New York, 1904).

Stone's "Timbers of Commerce and their Identification" (Rider, London, 1904) is a descriptive catalogue — rather than handbook — of 247 species, with phototype illustrations of the wood sections.

The forest resources of Texas are discussed by Bray in *Bulletin 47* of the Bureau of Forestry, U. S. Department of Agriculture; and the forests of the Hawaiian Islands are discussed by Hall in *Bulletin 48* of the same Bureau.

"The Forest Manual," containing the Forest Act (No. 1148), extracts from other laws of the Philippine Commission relating to the forest service, and the forest regulations prepared in accordance with the provisions of the Forest Act, is a little pamphlet recently issued by the insular Bureau of Forestry.

An account of basket willows and their insects is given by Hubbard and Chittenden in *Bulletin No. 46* of the Bureau of Forestry, U. S. Department of Agriculture.

The chestnut in southern Maryland is discussed by Zon in *Bulletin No. 53* of the Bureau of Forestry of the U. S. Department of Agriculture.

Hooper reports on Indian gums yielded by species of *Acacia* in *The Indian Forester* of September.

A considerable account of Gutta Percha and Rubber is contained, with illustrations, in the recently issued *Report of the Superintendent of Government Laboratories in the Philippine Islands*, for the year ending Sept. 1, 1903.

Economic articles on the Sisal plants and the West Indian anthracnose of cotton [caused by *Colletotrichum Gossypii Barbardense*] are contained in Vol. 5, no. 2, of the *West Indian Bulletin*.

An account of the propagation and marketing of Oranges in Porto Rico is given by Hendricksen in *Bulletin No. 4* of the Porto Rico Agricultural Experiment Station.

An account of the anatomy of edible berries, by Winton, is published in the *American Journal of Pharmacy* for September.

Native ornamental plants of New Mexico are considered by

Wootton in *Bulletin No. 51* of the New Mexico Agricultural Experiment Station.

Nestler, in a pamphlet on "Hautreizende Primeln" (Berlin, Borntraeger, 1904), shows that *Primula Sinensis*, *P. Sieboldii* and *P. Cortusoides* have the poisonous properties now well known as possessed by *P. obconica*, which he finds not shared by *P. officinalis*, *P. megaseaefolia*, *P. floribunda*, *P. Auricula*, *P. capitata*, *P. farinosa*, *P. Japonica*, *P. hirsuta*, *P. Clusiana*, *P. minima* or *P. rosea*.

The cultivation of mushrooms, including the "tissue-culture" growth of spawn, is considered by Duggar in *Farmers' Bulletin No. 204* of the U. S. Department of Agriculture.

An important paper on sexual reproduction in the Mucorineæ, by Blakeslee, forming No. 58 of the "Contributions from the Cryptogamic Laboratory of Harvard University," is published as Vol. 40, no. 4, of the *Proceedings of the American Academy of Arts and Sciences*.

Nos. 15 to 18 of Lloyd's *Mycological Notes* deal mainly with puff-balls, especially the typical material of European and North American herbaria.

An article on Uredineæ, with far-reaching conclusions on sexuality, by Blackman, is published in the *Annals of Botany* for July.

An account of *Bacillus violaceus Manila*, a pathogenic species, is given by Woolley in *Publication 15* of the Bureau of Government Laboratories of Manila.

An account of *Coniothyrium Diplodiella* is given by Montemartini in *L'Italia Agricola* of September 30.

Conidial fruit of *Morchella*, similar to if not identical with *Costantinella cristata*, is described by Molliard in the *Revue générale de Botanique* of June 15.

Three fascicles of Lindau's account of Hyphomycetes ("Rabenhorst's Kryptogamen-Flora von Deutschland etc., Vol. 1, Abtheilung 8") have recently appeared.

A continuation of Rehm's "Ascomycetes Americæ Borealis" is contained in the July number of *Annales Mycologici*.

Diseases of Ginseng are discussed by Van Hook in *Bulletin 219* of the Cornell University Agricultural Experiment Station, issued in June.

An excellent series of folio views in the Botanic Garden at Brussels has recently been issued by the Ministère de l'Agriculture of Belgium.

A portrait of Sir Joseph Hooker is published in Vol. 6, part 3, of the *Transactions of the Natural History Society of Glasgow*.

A medallion portrait of A. P. de Candolle forms the frontispiece of Vol. 4, no. 8, of the *Bulletin de l'Herbier Boissier*.

**The Journals.**—*Journal of Mycology*, May:—Morgan, "*Tubercularia fasciculata*"; Smith, "A New Egg-Plant Fungus [*Ascochyta Lycopersici*]"; Durand, "Three New Species of Discomycetes"; Christman, "Variability in our Common Species of Dictyophora"; Cockerell, "A New Hypholoma"; Clements, "Saccardo, De Diagnostica et Nomenclatura Mycologica, Admonita Quædam"; Kellerman, "A New Species of Næmosphæra [*N. lactucicola*]"; Kellerman, "Minor Mycological Notes—IV"; Kellerman, "Index to North American Mycology" [continued]; Kellerman, "Elementary Mycology" [continued]; Kellerman and Ricker, "New Genera and Species of Fungi Published since the year 1900"; and Kellerman, "Notes from Mycological Literature—X."

*Botanical Gazette*, June:—Thaxter, "Notes on the Myxobacteriaceæ"; Smith, "Undescribed Plants from Guatemala and other Central American Republics—XXVI"; Kearney, "Are Plants of Sea Beaches and Dunes true Halophytes?"; Eastwood, "Some New Species of Western Polemoniaceæ"; Peirce, "Notes on the Monterey Pine"; Chrysler, "Anatomical Notes on Certain Strand Plants"; and Allen, "Chromosome Reduction in *Lilium Canadense*."

*Botanical Gazette*, July:—Land, "Spermatogenesis and Oogenesis in *Ephedra trifurca*"; Smith, "Water-Relation of *Puccinia Asparagi*"; MacDougal, "Delta and Desert Vegetation"; Arthur, "The *Æcidium* of Maize Rust"; Livingston and Jensen, "An Experiment on the Relation of Soil Physics to Plant Growth"; and Eastwood, "A New *Gilia*."

*The Bryologist*, July:—Fink, "Further Notes on *Cladonias*—III"; Britton, E. G., "Further Notes on *Sematophyllum*"; Gilbert, "Mounting Mosses"; and Grout, "*Tortula pagorum* in Georgia."

*Bulletin of the Torrey Botanical Club*, June:—Salmon, "A Revision of some Species of *Ectropothecium*"; Murrill, "The *Polypora*-